

AMENDMENTS TO THE DRAWINGS

The Office Action objected to the drawings indicating that the reference characters “g”, “ga” and “gp” are not found in the specification. It is indicated that the Examiner has interpreted these characters as “9”, “9a”, and “9p”. Apparently, the Examiner is unfamiliar with the style of handwriting of the number 9 common in Europe where this application originally arose. Nonetheless, in order to advance prosecution, Applicants submit corrected drawing sheets with the number “9” written in an American style. Applicant respectfully requests that the objection be withdrawn.

REMARKS

Claims 12-29 are pending. By this Amendment, no claims are cancelled, claims 12, 13, 15, 16, 18, 19, 22, 24 and 29 are amended and no new claims are added.

Drawings

The Office Action objected to the drawings indicating that the reference characters “g”, “ga” and “gp” are not found in the specification. It is indicated that the Examiner has interpreted these characters as “9”, “9a”, and “9p”. The questioned reference characters are the numeral 9 hand written in a style common in Europe where this application originally arose. Nonetheless, in order to advance prosecution, Applicants submit corrected drawing sheets with the numeral 9 written in a more American style. Applicant respectfully requests that the objection be withdrawn.

Claim Objections

The Office Action objected to claims 12, 15, 16 and 24 indicating that these claims recite a “transparent material” as well as a “material” and the Office Action indicates that it is unclear whether these references are to the same material. By this Amendment, Applicant has amended claims 12, 15, 16 and 24 to consistently recite “transparent material”. Applicant respectfully requests that the Examiner withdraw the objection.

Claim Rejections – 35 U.S.C. § 101

The Office Action rejected claims 18-29 under 35 U.S.C. §101 asserting that the claimed invention is directed to non-statutory subject matter and that claims 18 and 24 “positively recite parts of a human”, i.e. “a transparent material (cornea)”. Applicant respectfully traverses the rejection. The claims in the application merely indicate that the device to which the claims are directed is for use in surgical procedures on a transparent material which according to the specification can be a human cornea. Accordingly, the claims are directed to a device for performing surgical procedures which is clearly patentable subject matter under § 101. The claims are not directed to acquiring a property right in a human being or any part of a human being. Applicant respectfully requests that the Examiner withdraw the rejection.

Claim Rejections – 35 U.S.C. § 112

The Office Action rejected claims 15-23 under 35 U.S.C. § 112, second paragraph as being indefinite. By this Amendment, Applicant has amended claims 15, 18 and 22, which were rejected, to overcome the rejections. Applicant respectfully requests that the Examiner withdraw the rejection.

Claim Rejections – 35 U.S.C. § 102

The Office Action rejected claims 12-17 under 35 U.S.C. § 102(b) as being anticipated by Juhasz et al., U.S. 5,993,438.

It should be noted that the claim terms “at substantially right angles to the optical axis” and “substantially parallel to the optical axis” are defined by the Applicants in paragraph 0014 of the application as published. Understanding the Applicants’ definition of these terms assists in understanding the invention claimed.

With particular regard to independent claims 12 and 15, the Office Action indicates that Juhasz discloses a method including producing a spiral pattern that is “substantially centrosymmetric (substantially at a right angle) to the optical axis of the eye”.

Claims 12-14

Claim 12 recites that it is *the main axis of the spatial spiral* that is oriented at substantially right angles to the optical axis. The spiral as disclosed by Juhasz is planar spiral not a spatial spiral as claimed and described in the present application and the axis about which the Juhasz spiral is formed is parallel to the optical axis contrary to the claimed spatial spiral. The claimed spatial spiral would be at about a 90° angle to that which is disclosed in Juhasz. Accordingly, Juhasz does not disclose or suggest this limitation of the claims and the claims should be patentable over the Juhasz reference for at least this reason.

Additionally, claim 12 recites “that the focal point is adjusted along a spatial spiral, which is located in a desired location of the cut and extends along a main axis that is substantially right angles to the optical axis. The orientation of the spatial spiral can be better understood by referring to Fig. 9, which clearly depicts an example spatial spiral. Note that the main or long axis of the spatial spiral, annotated H, is slightly canted from the plane defined by the x and y axes in accordance with the explanation of paragraph 0014 while the optical axis is along the Z axis. Therefore, claim 12 should be patentable for at least this additional reason.

Further still, Juhasz does not disclose or suggest “forming a cut that encloses a partial volume” as recited in independent claims 12 but instead teaches filling a volume with plasma bubbles. Accordingly, Juhasz does not disclose or suggest a partial volume being enclosed by a cut surface. Thus, Juhasz does not teach all the limitations of claims 12 and cannot anticipate claim 12.

Claims 13-14 depend from claim 12 and should be patentable for at least these reasons as well.

Claim 13

With regard to claim 13, the Examiner apparently reads the term “posterior” not in relation to the cut surface, but in relation to the epithelium of the cornea. By this Amendment, Applicant has amended claim 13 to recite “wherein the spiral is begun in a part of the transparent material, which is posteriorly located in the cut surface substantially along the optical axis”. Accordingly claim 13 should be patentable for at least this additional reason. Applicant respectfully requests that the Examiner withdraw the rejection.

Claim 14

The Office Action indicates that Juhasz discloses the limitations of claim 14. Juhasz, however, discloses the stacking of flat layers of plasma bubbles resulting from photodisrupted tissue. The only technically feasible way to stack these layers is from posterior to anterior as to do otherwise would generate a layer of plasma bubbles that would interfere with the production of a layer of plasma bubble behind it. However, Juhasz does not disclose a main axis of a spatial spiral which is at substantially a right angle to the optical axis of the laser and the

eye. Therefore, the limitations of claim 14 are not disclosed or suggested by Juhasz and claim 14 is patentable for at least this additional reason.

Claims 15-17

With particular regard to independent claim 15, the Office Action indicates that Juhasz discloses a method including producing a spiral pattern that is “substantially centro-symmetric (substantially at a right angle) to the optical axis of the eye”.

Claim 15 recites “adjusting the focal point along elevation lines in a desired location of the cut, which are located in planes that are substantially parallel to the optical axis.” Juhasz does not disclose or suggest these limitations. First, the spiral disclosed by Juhasz is not an elevation line. An elevation line is generally a closed figure that begins and ends at the same point. Second the spiral disclosed by Juhasz is perpendicular to the optical axis and not “substantially parallel to the optical axis” like the claimed elevation lines. Thus, Juhasz does not teach all the limitations of claim 15 and cannot anticipate claim 15. Accordingly, claim 15 should be patentable. Claims 16-17 depend from claim 15 and should be patentable for at least these reasons as well.

Claim 16

With regard to claim 16, the Examiner apparently reads the term “posterior” not in relation to the cut surface, but in relation to the epithelium of the cornea. By this Amendment, Applicant has amended claim 16 to recite “wherein each elevation line is begun on a part which is posteriorly located in the cut substantially along the optical axis”. Accordingly claim 16 should be patentable for at least this additional reason. Applicant respectfully requests that the Examiner withdraw the rejection.

Claim 17

The Office Action indicates that Juhasz discloses the limitations of claim 17. Juhasz, however, discloses the stacking of flat layers of plasma bubbles resulting from photodisrupted tissue. The only technically feasible way to stack these layers is from posterior to anterior as to do otherwise would generate a layer of plasma bubbles that would interfere with the production of a layer of plasma bubble behind it. However, Juhasz does not disclose elevation lines that are substantially parallel to the optical axis of the laser and the eye. Therefore, the limitations of claim 17 are not disclosed or suggested by Juhasz and claim 17 is patentable for at least this additional reason.

Claims 18-23

The Office Action rejected claims 18-29 under 35 U.S.C. § 102 as being unpatentable over Swinger (U.S. 6,325,792). With regard to claims 18, 20 and 24, the Office Action indicates “wherein the Examiner has interpreted the spiral as extending along, a main axis that is at substantially right angles to, and elevation lines that are substantially parallel to, an optical axis” (sic). The stated interpretation, however, is contrary to what is disclosed in the prior art, contrary to the language of the claim and contrary to the description of the spatial spiral that is described in the application.

Referring again to Fig. 9 and independent claim 18, it is apparent that it is long axis of the spatial spiral that is at right angles to the optical axis and that the planar spiral that is disclosed by Swinger does not meet this limitation. Accordingly, Swinger does not disclose or suggest all of the limitations of independent claim 18 and claim 18 should be patentable for at least this reason. Claims 19-23 depend from claim 18 and should be patentable for at least the same reasons as claim 18.

Claim 19

With regard to claim 19, the Office Action indicates that the Examiner has interpreted the adjustable optics in the deflecting unit as being of language related to intended use. Applicant respectfully traverses the assertion. By this Amendment, to advance prosecution, Applicant has amended claim 19 to further demonstrate the function of the adjustable optics in the deflecting unit. Therefore, claim 19 should be patentable for at least this additional reason.

Claim 20

With regard to claim 20, the Office Action indicates that the zoom optics of Swinger et al. U.S. 6,325,792 is controlled by a sinusoidal function as claimed when generating spiral 619 in Figure 7. Applicant respectfully traverses the assertion. In Swinger, first the spiral does not have a main axis that extends substantially perpendicular to the optical axis as defined and claimed. The spiral 619 would require a continuously growing function for the zoom optics not a cyclical function. Therefore, claim 20 cannot be anticipated or render obvious by Swinger and Juhasz. Thus, claim 20 is allowable for at least this additional reason.

Claim 21

With regard to claim 21, the same explanation applies as that related to claim 20. It is not possible to generate the spiral 619 in Figure 7 by a combination of a cyclical and a linear function. To the contrary, two cyclical functions would be required to create the spiral in this way. Accordingly, the limitations of claim 21 are not disclosed in the prior art cited and claim 21 should be patentable as well for at least this reason.

Claims 22 and 23

Claims 22 and 23 are patentable at least by virtue of their dependency on a patentable base claim.

Claims 24-29

Claims 24-29 were rejected on the same basis as claims 18-23 discussed above.

With regard to claim 24, the office action interprets spiral 619 in Fig. 7 of Swinger as a elevation line parallel to the optical axis. First the spiral as disclosed by Swinger is not substantially parallel to the optical axis. Second, the spiral is not an elevation line. An elevation line is generally a closed figure that begins and ends at the same point.

Referring to Fig. 10 and independent claim 24, it is apparent that the elevation lines as claimed are substantially parallel to the optical axis and that the spiral that is disclosed by Swinger in Fig. 7 does not meet this limitation. The Swinger spiral is not an elevation line and is not parallel to the optical axis. Accordingly, Swinger does not disclose or suggest all of the limitations of independent claim 24 and claim 24 should be patentable for at least this reason. Claim 25-29 depend from claim 24 and should be patentable for at least the same reasons as claim 24.

Claims 26-27

Claim 26 further recites “the control unit controls the adjustable optics according to a substantially continuous, first substantially sinusoidal function”. These limitations refer to control of the telescopic zoom optics to follow the contour lines that are parallel to the optical axis. Regarding claims 26 and 27, the Office Action indicates that the Examiner has interpreted the spiral as a deflection in one of two spatial directions according to a second substantially sinusoidal function, and in the other spatial directions according to a substantially linear function having an oscillation or stepped function superimposed thereon. This interpretation, however, is not supported by the cited prior art reference, as discussed above. One cannot create a spiral as depicted in Figures 7 and identified by reference numeral 619 of Swinger by the claimed functions. Swinger does not disclose or suggest a cyclical function controlling zoom optics. Accordingly, Swinger cannot anticipate or render obvious the invention as claimed in claim 26. Accordingly, the claims are not anticipated and should be patentable for at least this additional reason.

Claims 28

Claim 28 is patentable at least by virtue of its dependency on a patentable base claim.

Claim 29

Claim 29 has been amended to depend from claim 24 and should be patentable for at least the same reasons as claim 24.

Claims 13-14 depend from claim 12 and should be patentable for at least the same reasons as claim 12. Claims 16-17 depend from claim 15 and should be patentable for at least the same reasons as claim 15. Claims 19-23 depend from claim 18 and should be patentable for at least the same reasons as claim 18. Claims 25-29 depend from claim 24 and should be patentable for at least the same reasons as claim 24.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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